REMARKS/ARGUMENTS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1-18 are presently active. Claim 1 has been presently amended. Claims 16-18 have been added. No new matter has been added.

In the outstanding Office Action, Claims 1, 3, 8, 9, 10, 11, 12, and 15 were rejected under 35 U.S.C. § 102(b) as being anticipated by Shiomi et al (U.S. Pat. No. 5,844,252). Claims 1, 2, 8, 11, 12, 13, 14, and 15 were rejected under 35 U.S.C. § 102(b) as being anticipated by Yamazaki (U.S. Pat. No. 5,089,802). Claims 2, 4, 13, and 14 were rejected under 35 U.S.C. § 103(a) as being obvious over Shiomi et al in view of Yamazaki. Claims 5 and 6 were rejected under 35 U.S.C. § 103(a) as being obvious over Shiomi et al and Yamazaki et al in view of Malinski et al (U.S. Pat. No. 5,603,820). Claim 7 was rejected under 35 U.S.C. § 103(a) as being obvious over Shiomi et al and Malinski et al in view of Buttery et al. (U.S. Pat. No. 5,405,618). Claims 3, 4, 9, and 10 were rejected under 35 U.S.C. § 103(a) as being obvious over Yamazaki in view of Shiomi et al. Claims 5 and 6 were rejected under 35 U.S.C. § 103(a) as being obvious over Yamazaki and Shiomi et al in view of Malinski et al. Claim 7 was rejected under 35 U.S.C. § 103(a) as being obvious over Yamazaki, Shiomi et al, and Malinski et al in view of Buttery et al.

In an effort to expedite prosecution of this application, Claim 1 has been clarified to define:

> 1. A microelectrode comprising:
> an electrically conducting diamond layer;
> a non-conducting diamond layer formed from electrically non-conducting diamond presenting a planar surface
> one or more pins or projections of electrically conducting diamond extending at least partially through the non-conducting diamond layer, the pins presenting planar areas of electrically conducting diamond;
> the pins or projections which extend to the planar surface of the non-conducting diamond layer, presenting planar areas of electrically conducting

> diamond co-planar with the planar surface of the electrically non-conducting diamond; and
>
> a contact surface or surfaces on a back side of the electrically conducting diamond layer for connection to an external circuit.

Support for these clarifications is found illustratively in Applicants' specification in claim 2, page 5, lines 1 and 2, page 5, line 8, page 11, lines 9 and 10, read with Figure 1 and page 11, lines 16 and 17, read with Figure 2.

Regarding Shiomi et al, the examiner is reminded that M.P.E.P. § 2131 requires for anticipation that each and every feature of the claimed invention must be shown in as complete detail as is contained in the claim. The Court in *Net Moneyin, Inc. v. Versigen, Inc.*, 454 F.3d 1359, 1371, 88 USPQ2d 1751, 1760 (Fed. Circ. 2008) explained that:

> Rejections under 35 U.S.C. §102 are proper only when the claimed subject matter is identically disclosed or described in the prior art. Thus, it is not enough that the prior art reference discloses part of the claimed invention, which an ordinary artisan might supplement to make the whole, or that it includes multiple, distinct teachings that the artisan might somehow combine to achieve the claimed invention. The prior art reference must clearly and unequivocally disclose the claimed invention or direct those skilled in the art to the invention without any need for picking, choosing, and combining various disclosures not directly related to each other by the teachings of the cited reference.

Claim 2 positively recites that the areas of electrically conducting diamond are presented which are coplanar with the surface of the non-conducting diamond into which they project.

Shiomi et al have pins which end in points. A point is not an area and, more particularly, not a planar area. A plane is defined in the dictionary as "a surface such that the straight line joining any two points in it lies wholly within it." That is, the definition of a point, as in the Shiomi et al structure, differs from the planar surface set forth in amended Claim 1.

Shiomi et al do not clearly and unequivocally disclose "planar areas of electrically conducting diamond coplanar with a planar surface of the electrically non-conducting diamond" and instead ***teaches away*** from that claimed feature. Thus, amended Claim 1 patentably defines over Shiomi et al.

As to new independent Claim 16, Shiomi et al do not have "a well or reservoir containing an additive which presents a surface coplanar with the planar surface in which the well or reservoir is created." Thus, independent Claim 16 patentably defines over Shiomi et al.

Recent guidelines from the Patent Office regarding *KSR* published in Federal Register vol. 75, No. 169 (September 1, 2010) indicates at section five (5):

> 5. Federal Circuit Cases Discussing Consideration of Evidence. Office personnel should consider all rebuttal evidence that is timely presented by the applicants when reevaluating any obviousness determination. In the case of a claim rendered obvious by a combination of prior art references, applicants may submit evidence or argument to demonstrate that the results of the claimed combination were unexpected.
>
> Another area that has thus far remained consistent with pre- *KSR* precedent is the consideration of rebuttal evidence and secondary considerations in the determination of obviousness. As reflected in the MPEP, such evidence should not be considered simply for its "knockdown" value; rather, all evidence must be reweighed to determine whether the claims are nonobvious.
>
> Once the applicant has presented rebuttal evidence, Office personnel should reconsider any initial obviousness determination in view of the entire record. *See, e.g., In re Piasecki, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984); In re Eli Lilly & Co., 90 F.2d 943, 945, 14 USPQ2d 1741, 1743 (Fed. Cir. 1990).* All the rejections of record and proposed rejections and their bases should be reviewed to confirm their continued viability.
>
> MPEP § 2141.
>
> Office personnel should not evaluate rebuttal evidence for its "knockdown" value against the *prima facie* case, *Piasecki, 745 F.2d at 1473, 223 USPQ at 788,* or summarily dismiss it as not compelling or insufficient. If the evidence is deemed insufficient to rebut the *prima facie* case of obviousness, Office personnel should specifically set forth the facts and reasoning that justify this conclusion.

Indeed, the history of this prosecution is very similar to that in *Ex parte Malone* (attached herewith). In *Ex parte Malone*, the Board reversed an obviousness decision reached by the examiner who had not considered the proffered evidence. *Ex parte Malone* stated:

> The Examiner's response to Nykerk Declaration is largely dismissive. In fact, even though Appellants' Briefs place extensive reliance on the Nykerk Declaration to overcome the prima facie case, the Examiner's Answer never addresses it in any detail. This is improper. Whether the claimed invention would have been obvious cannot be determined without considering evidence attempting to rebut the prima facie case. Manifestly, the Examiner's consideration and treatment of the Nykerk declaration is improper, since the Examiner has not reweighed the entire merits of the matter. Rather, he has dismissed the evidence of nonobviousness in a cursory manner. Since the Examiner did not properly consider the submitted evidence, the rejection cannot be sustained.

Here, the Examiner seems to have dismissed the contents of the declaration evidence and has not reweighed the entire merits of the matter.

Specifically, the Examiner criticized the declaration as lacking factual or scientific evidence. Yet, the declaration is evidence to be considered and does contain factual and/or scientific evidence. The declaration attests that an etching process is used in Shiomi et al to remove parts of the layers 12 and 13. An etching process removes diamond material – – that is what Shiomi et al states and that is what Shiomi et al required to produce his protuberances. The declaration attested that, to the skilled man, starting with a layer of non-doped diamond 13 disposed over a layer of doped diamond 12 (as in Figure 2C of Shiomi et al), there are only two possibilities: (1) areas of non-conducting diamond projections are left in the openings of layer 13 or (2) if etching is continued, areas of conducting diamond projections are left with their uppermost points beneath the openings of layer 13. That must be so in any etching process and is consistent with Shiomi et al.

Nevertheless, in an effort to promote the Examiner's understanding of the art to promote the Examiner's reweighing the entire merits of the matter, the Examiner's attention is invited to the fact that electron emission from diamond is quite a complicated matter, understanding of which has developed since about 1990 and even now is only partial. In a non-doped, (and hence non-- conductive) diamond, the electrons in the valence band are fixed, and there are no electrons in the conduction band (as the energy gap between the valence and conduction bands is about 5.45 eV making undoped diamond is a very good electrical insulator). However, the energy level of the conduction band minimum is just above the energy level of the vacuum which means that electrons in the conduction band can be easily emitted from the material. Because of this behavior, undoped diamond surfaces are said to have a "negative electron affinity." The extent of this emission at room temperature is limited by the extremely low density of electrons in the conduction band at room temperature.

To make a practical diamond field emitter, such as the device disclosed in Shiomi et al, the structure needs to provide a wayof continually replenishing the supply of electrons to the emitting surface. This is normally achieved by doping the diamond with an n-type dopant (as in Shiomi et al). However, doping the diamond results in the energy levels changing such that the vacuum level is now at a higher energy than the conduction band minimum, necessitating a significant external field to extract the electrons. It is at this point that the formation of the projections becomes desirable to minimize the field required by utilizing the field enhancement effects associated with points; compare, for example, lightning conductors and umbrellas in thunder storms.

Thus, what Shiomi et al have done is to provide an n-type doped diamond layer that can be made to emit electrons, overlaid this with an i-type diamond layer and then converted the surface by etching to pointed projections to facilitate the easy extraction of those

electrons. If the upper portions of the pointed projections were made of insulating diamond, then these upper portions **cannot** function as electron emitters, as there are no electrons to emit.

Column 12, lines 57 to 65, of Shiomi et al states that there is a plurality of electron-emitting protuberances of conducting diamond on which no non-conducting diamond is disposed. The electrons are emitted from this conducting diamond. That does not mean that in the Figure 2D embodiment, the electrons are emitted from the non-conducting points – that is a physical impossibility. In the Figure 2D embodiment, the electrons are emitted from the conducting side surfaces of the protuberances 122 which lie **below** the layer of non-conducting diamond layer.

Each of the passages of Shiomi et al relied on by the Examiner, including column 12, lines 57 to 65, say no more than that electron emission is from the ***conducting portions*** of the protuberances.

The passing reference the Examiner makes to Komada U.S. Pat. No. 6,599,841 does not change this fundamental difference between the structure claimed and that of Shiomi et al.

For all these reasons, Applicants request the Examiner's reconsideration of this matter in view of the declaration evidence and the plain language of Shiomi et al.

Under this reconsideration, independent Claims 1 and 16 (and the claims dependent therefrom) are believed to be in condition for allowance.

Regarding more specifically new Claims 17 and 18, the conducting diamond of Claims 17 and 18 comprises diamond doped with boron. Boron doped diamond is p-type diamond. See for support of Claims 17 and 18 Applicants' specification page 7, third

paragraph, page 7, penultimate line, page 8 lines 19 and 20, page 9, lines 8 and 21, and page 10 lines 1 and 20.

For the Shiomi et al electron emitter to function, as explained above, the conducting diamond must be ***n-type doped diamond*** such as nitrogen, n-type doping in diamond results in the formation of donor levels below the conduction band from which electrons can be excited into the conduction band; the electrical conductivity is provided by electrons.

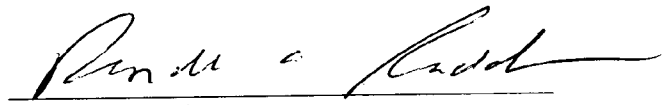
Thus, Shiomi et al fail to disclose or suggest electrically conducting diamond comprising diamond doped with boron.

Hence, Claims 17 and 18 further define over Shiomi et al.

In view of the present amendment and in light of the above discussion, the outstanding grounds for rejection are believed to have been overcome. The application as amended herewith is believed to be in condition for formal allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, L.L.P.



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Attachment: *Ex parte Malone*

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ATTACHMENT

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte BRIAN J. MALONE, TODD M. NYKERK, and
TIMOTHY J. KELLY

Appeal 2009-003894
Application 10/054,173
Technology Center 2800

Decided: August 27, 2009

Before JEFFREY T. SMITH, LINDA M. GAUDETTE, and,
KAREN M. HASTINGS, *Administrative Patent Judges*.

HASTINGS, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's final rejection of claims 1-6, 8-10, 12-23, 25, 26, and 28-34.[1] (App. Br. 4). We have jurisdiction pursuant to 35 U.S.C. § 6(b).[2]

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[1] Claims 7, 11, 24, and 27 have been canceled. (App. Br. 4). Claim 6 is not listed by the Examiner in any ground of rejection, but is included in the list

We REVERSE.

THE INVENTION

Appellants' claimed invention is directed to a method of manufacturing a lamp housing, as well as to a lamp housing. Claims 1 and 16, reproduced below, are representative of the subject matter on appeal.

1. A method of manufacturing a conductive lamp housing, comprising depositing particles by direct metallization to form a layer of conductive material on a generally non-planar surface of a substrate that forms part of the lamp housing, in order to form part of one or more electrical spray circuits when said conductive material is connected to at least one or more power sources and one or more light sources.

16. A lamp housing comprising a substrate, further comprising a conductive layer for one or more electrical circuits deposited directly on said substrate, wherein said conductive layer is 1 to 4 microns thick.

THE REJECTIONS

The prior art relied upon by the Examiner in rejecting the claims on appeal is:

Elarde	4,532,152	Jul. 30, 1985
Suzuki	6,290,380 B1	Sep. 18, 1985

Appellants' Admission of Prior Art, Specification, pp. 6, 7 (hereafter, AAPA)

Appellants appeal the following rejections:

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of claims rejected (*see* cover sheet of Final Rej. mailed Jan. 23, 2006; App. Br. 4; Ans. 2).

[2] In this decision we have considered Appellants' arguments presented in the Briefs filed October 23, 2006 and April 2, 2007.

Claims 1, 8-10, 12-20, 22, 23, 25, 26, and 28-32 are rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Suzuki and Elarde.

Claims 2-5, 21, 33, and 34 are rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Suzuki, Elarde, and AAPA.

ISSUE

The dispositive issue before us is whether the Examiner has reversibly erred in not considering the rebuttal evidence along with the facts on which the conclusion of prima facie obviousness was reached. We answer this question in the affirmative. Therefore, we REVERSE.

OPINION

"After a prima facie case of obviousness has been made and rebuttal evidence submitted, all the evidence must be considered anew." *In re Eli Lilly & Co.*, 902 F.2d 943, 945 (Fed. Cir. 1990) (citing *In re Piasecki*, 745 F.2d 1468, 1472 (Fed. Cir. 1984)); *Piasecki*, 745 F.2d at 1472 ("Prima facie obviousness is a legal conclusion, not a fact. Facts established by rebuttal evidence must be evaluated along with the facts on which the earlier conclusion was reached, not against the conclusion itself." (internal cites omitted)); *see also* MPEP § 716.01(d).

In support of the nonobviousness position, Appellants proffered a Declaration by Todd Nykerk, filed on March 16, 2004[3] (*see* Evidence Appendix of the Brief).

[3] The Examiner entered the Nykerk Declaration filed "under 37 C.F.R. [§] 1.132" but dismissed it as "only opinion" (*see* Advisory Action dated April 4, 2004, p. 2).

According to Appellants, the Nykerk Declaration "explains in detail why a person of ordinary skill . . . would not understand the prior art to teach or suggest a conductive layer 1 to 4 microns thick deposited directly on a lamp housing" (App. Br. 10); is "not mere opinion" (App. Br. 14); discusses "various problems with the complex process disclosed in Suzuki" which the Examiner "improperly dismissed" and "ignored the supporting facts" therein (Reply Br. 3); and identifies "design considerations" in the lamp assembly art which the Examiner does not address (Reply Br. 4; *see also* Reply Br. 8).

The Examiner's consideration of the Nykerk declaration consists of the following paragraph which bridges pages 15 and 16 of the Answer:

> the declaration of Todd Nykerk included in the Appeal Brief filed on October 23, 2006 is fully considered by the examiner, but insufficient to overcome the rejection of claims 1-6, 8-10, 12-23, 25, 26 and 28-34, because failed to depend upon the amount of factual evidence to support the conclusion of enablement. *In re Buchner,* 929 F.2d 660, 661, 18 USPQ2d 1331, 1332 (Fed. Cir. 1991)[.] The expert's opinion on the ultimate legal conclusion must be supported by something more than a conclusory statement; cf. *In re Alton*, 76 F.3d 1168, 1174, 37 USPQ2d 1578, 1583 (Fed. Cir. 1996).
>
> (Ans. 15, 16)

The Examiner's response to Nykerk Declaration is largely dismissive.[4] In fact, even though Appellants' Briefs place extensive reliance on the Nykerk Declaration to overcome the prima facie case, the Examiner's Answer never addresses it in any detail. This is improper. Whether the

[4] Further, no rejection of the claims has been made based on a failure to comply with the enablement requirement. Thus, the relevance of the Examiner's remark concerning "factual evidence to support the conclusion of enablement" is not apparent.

claimed invention would have been obvious cannot be determined without considering evidence attempting to rebut the prima facie case. Manifestly, the Examiner's consideration and treatment of the Nykerk declaration is improper, since the Examiner has not reweighed the entire merits of the matter. Rather, he has dismissed the evidence of nonobviousness in a cursory manner. Since the Examiner did not properly consider the submitted evidence, the rejection cannot be sustained.

For the foregoing reasons, the rejections of claims 1-6, 8-10, and 12-23, 25, 26, and 28-34 under 35 U.S.C. § 103(a) are reversed.

ORDER

The Examiner's decision rejecting claims 1-6, 8-10, and 12-23, 25, 26, 28-34 is reversed.

REVERSED

tc/cam

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